

polyester, such as MILEASE T, having an average molecular weight of 5,000 to 200,000 (preferably 10,000 to 50,000). These detergent compositions further contain 5 to 95% (most preferably 10 to 25%) of certain compatible alcohol sulfate and alkylethoxy sulfate detergent surfactants and no more than 10% of other incompatible anionic surfactants such as the linear alkyl benzene sulfonates.

U.S. Pat. No. 4,132,680, Nicol, issued Jan. 2, 1979, also discloses laundry detergent compositions having soil release properties which contain 2 to 95% (preferably 10 to 60%) of a detergent surfactant and 0.15 to 25% (most preferably 1 to 10%) of an ethylene terephthalate/PEG terephthalate (mole ratio of 65:35 to 80:20) soil release polyester having a molecular weight of 10,000 to 50,000, e.g. MILEASE T. These compositions further comprise 0.05 to 15% (most preferably 0.1 to 5%) of a component which disassociates in aqueous solution to yield quaternary ammonium cations having one to three C<sub>8</sub>-C<sub>24</sub> alkyl groups. These cations are taught by Nicol to improve the deposition of the soil release polyester on the laundered fabric. See column 11, lines 14-21.

#### F. Use of polyesters in rinse-added products to impart soil release properties

Canadian Pat. No. 1,100,262, Becker et al, issued May 5, 1981, discloses fabric softener compositions containing 1 to 80% (preferably 5 to 50%) of a fabric-softening agent, such as ditallow dimethyl ammonium chloride, in combination with 0.5 to 25% (preferably 1 to 10%) of certain choline fatty acid esters. These softening compositions preferably include 0.5 to 10% (preferably 1 to 5%) of an ethylene terephthalate/PEG terephthalate soil release polyester, such as PERMALOSE or ZELCON.

U.S. Pat. No. 3,893,929, Basadur, issued July 8, 1975, discloses rinse-added acidic solutions containing a soil release agent made from a dibasic carboxylic acid (preferably terephthalic acid), a polyalkylene glycol (preferably a PEG having a molecular weight of 1,300 to 1,800) and an alkylene glycol (ethylene, propylene or butylene glycol). Preferred soil release agents have a molecular weight of from 3,000 to 5,000. Cationic fabric softeners, such as ditallow dimethyl ammonium chloride, can be included in these compositions, but are not preferred "since they tend to retard the deposition of the soil release agent on the polyester fibers at acidic pH." See column 7, lines 54-59.

U.S. Pat. No. 3,712,873, Zenk, issued Jan. 23, 1973, discloses textile treating compositions applied by spraying or padding which comprise 1 to 5% of a fatty alcohol polyethoxylate and 0.1 to 5% of a soil release polyester of the type disclosed in the Basadur patent. These compositions can additionally contain up to 4% of a quaternary ammonium compound having one C<sub>16</sub>-C<sub>22</sub> alkyl group. The combination of this quaternary ammonium compound with the polyester is described as improving the soil-release characteristic of the treated fabric. Zenk also states that other quaternary ammonium compounds, such as ditallow dimethyl ammonium chloride, did not give the same superior performance. See column 3, lines 57-61.

#### G. Use of polyesters in dryer-added products to impart soil release properties

U.S. Pat. No. 4,238,531, Rudy et al, issued Dec. 9, 1980, discloses dryer-added products which contain a

"distributing agent", such as polyethylene glycol, and an adjuvant (which can be a soil release agent) applied to the fabric. Soil release agents disclosed include polyacrylic resins, polyvinyl alcohol and PERMALOSE TG polyesters (see Example 8).

#### H. Use of polyesters in fabric or textile treating solutions which are heat cured to impart soil release and/or antistatic properties

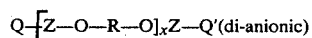
U.S. Pat. No. 3,512,920, Dunlap, issued May 19, 1970, discloses low molecular weight alkylene glycol/polyalkylene glycol terephthalic acid polyesters which are used in resin treating baths containing starch or cellulose derivatives to impart soil release properties to cotton/polyester fabrics after heat curing. The alkylene glycols which can be used to make these polyesters include ethylene glycol, 1,2-propylene glycol, 1,3-propylene glycol, butylene glycol and mixtures thereof. The polyalkylene glycols which can be used include PEG, polybutylene glycol and mixtures thereof which have an average molecular weight of 200 to 20,000 (preferably 1,000 to 5,000).

U.S. Pat. No. 3,416,952, McIntyre et al, issued Dec. 17, 1968, discloses polyester anti-static agents which can contain a water-soluble polymeric group such as a polyoxyalkylene group having an average molecular weight of from 300 to 6,000. Preferred polyoxyalkylene groups are the PEG's having an average molecular weight of from 1,000 to 4,000. Treatment is carried out by applying an aqueous dispersion of the polyester in the presence of an anti-oxidant, followed by heating to a temperature above 90° C. to obtain a durable coating of the polyester on the treated article. Example 6 discloses one such polyester formed by the catalyzed reaction of dimethyl terephthalate, ethylene glycol and an O-methyl poly(oxyethylene)glycol having an average molecular weight of 350. A 20% solution of this polyester in benzyl alcohol was used to impart anti-static properties to a polyester fabric. Example 7 discloses a 20% aqueous solution of a similar polyester used to impart anti-static properties to a polyester fabric.

U.S. Pat. No. 4,427,557, Stockburger, issued Jan. 24, 1984, discloses low molecular weight copolyesters (2,000 to 10,000) formed by the reaction of ethylene glycol, a PEG having an average molecular weight of 200 to 1,000, an aromatic dicarboxylic acid (e.g., dimethyl terephthalate), and a sulfonated aromatic dicarboxylic acid (e.g., dimethyl 5-sulfoisophthalate). The PEG can be replaced, in part, with monoalkylethers of PEG such as the methyl, ethyl and butyl ethers. A dispersion or solution of the copolyester is applied to the textile material and then heat set at elevated temperatures (90° to 150° C.) to impart durable soil release properties. See also the McIntyre et al. patent, where Example 2 discloses a random copolyester used to impart antistatic properties which is formed by reacting dimethyl terephthalate, sodium dimethyl sulfoisophthalate, ethylene glycol and a PEG having an average molecular weight of 1540.

#### SUMMARY OF THE INVENTION

The present invention relates to oligomeric soil-release esters having at least one anionic substituent group, said esters having the formula



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or